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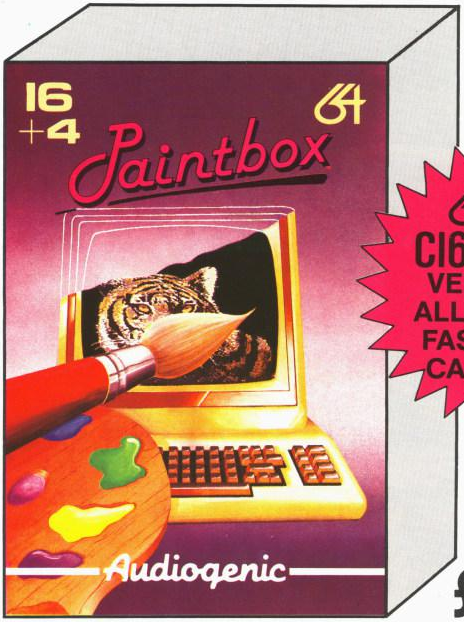

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Editorial

THE WORLD of home computer users is large and diverse, and it's a challenge to any magazine to cover it in sufficient depth. Some take the easy way out, catering only for fanatical games players, or only for business users, or only for programmers. *Commodore Horizons* prides itself on covering all the many aspects of Commodore computing. There's something for everyone; games reviews for a variety of machines, hardware articles, programming tips, readers' programs, news and our popular regular features such as *Answer Back* and *Mail Merge*. Also starting this month is a regular column by popular programmer and sheep enthusiast *Jeff Minter*, who we've lured away from another mag which apparently wasn't able to face up to The Hairy One's constructive criticism.

You'll also see a few changes as the result of our recent Readers' Survey, which prompted a massive response, and gave rise to lots of good ideas. The breadth of coverage shown in the magazine will be reflected in the *Commodore Horizons Show* in October, of which more details on the news page. There'll be something for every Commodore user at the Novotel, Hammersmith, London, on October 26th/27th, and as an extra inducement to come along, there's a voucher in this issue entitling you to 50p off the entrance fee.

Next Month

Plus/4 software
Yes, there's some out there!

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and music software

Plus
News, contests and reviews

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ABC

SUBMITTING ARTICLES *Commodore Horizons* invites readers' contributions, either program listings or articles. Articles should be typed, double spaced with a wide margin. When possible programs should be submitted on cassette or disk with a printout on plain white paper. Please keep a copy of your submission — do not send your only copy. Please enclose an s.a.e. if you wish your submission to be returned. All submissions must be your own original work.

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FOLLOWING the review of Superscript for the Commodore 64 in the July issue of Commodore Horizons (page 36), I should be pleased if you would advise your readers that Precision Software decided to offer them even better value by launching the product at £69.95, instead of £99.95 as originally planned.

Keep up the good work!

John Tranmer
Managing Director
Precision Software Ltd

Reset ideas

I'VE HAD a reset switch fitted to my 64 for about a year, and I find it most useful for halting auto-run programs, basic especially. Because the memory is not actually cleared when the reset is used, with the help of a small machine code program we can stitch it back together and list, amend and run again if we like. First load and run the reset program, then type NEW, then load the program you wish to break. When it auto-runs, press the reset then type SYS 50000, then you can list the program. This can be very useful in certain adventure games if you get really stuck.

Another use which some readers might find useful is for unlimited lives in games such as **Manic Miner**; load the game, press reset then type poke 16573,234:poke 16572,234:poke 16571,234:sys 16384.

For people concerned about their guarantees who don't want to stick bent paperclips into the user port or solder any wires in the machine, here's how to make a plug in reset switch. First, buy a small push to make switch and a six pin plug to fit the serial port, the same as is on the disk drive. Then solder the switch to pins No.6 and No.2 (see user manual), plug it in, and that's it. If you have a disk drive connected, then it can plug into the back just the same. It can be left in place indefinitely, and it will not interefere with the normal working of the computer in any way.

Here's Mr Dent's Basic Recovery program:

```
10 FOR C = 0 to 25
20 READ BYTE
30 POKE 50000+C, BYTE
40 NEXT C
50 DATA 169, 8, 160, 1, 145,
   43, 32, 51, 165, 34, 133, 45,
   133, 47, 133, 49, 165, 35,
   133, 46
60 DATA 133, 48, 133, 50, 96
```

P Dent
Seaham
Co. Durham

Helpline hints

I COULDN'T agree more with P. Dent's plea (C.H. July issue) for an Adventurer's helpline! So here we go: for all of you frustrated adventurers having sleepless night over **Feasibility Experiment** or **Time Machine** I offer my humble services as your guide. Could anyone in return, save me from being ripped apart after blowing up the tent in **Circus**? I'm also in great need of assistance with Level 9's **Snowball**!

M Hendriksen
Vilenstede 248
1183 AR Amsterdam
The Netherlands

Arabic answer

I REFER to your article in the July issue titled 'Automatic Arabic'.

The Arabic operating system, ZAN-64, is a product developed, manufactured and marketed by our company Zanine Ltd and not by JCL Software, a close associate of Zanine Ltd.

Zan-64 is a bilingual Arabic/English operating system used for the Commodore 64 microcomputer and has been officially approved by Commodore. Zanine is proud to declare that Zan-64 is on sale now all over the Arab countries, and many parts of Europe, and we are currently engaged in developing a similar product for the C128.

Zanine and JCL Software have been closely collaborating on developing high standard Arabic software. And the first result of this collaboration was the joint development of the Arabic wordprocessor 'Al Qelem Elseri' for the Commodore 64. This product was launched at the 6th Commodore Show in June.

Shirko Abid
Zanine Ltd

1531 to Vic 20

MY BROTHER has a C16. If I buy myself a cheap Vic 20 on its own, is there a cable available that would connect between the cable of his datasette and the Vic 20, so we could share it between the computers?

Andrew Banks
Wivenhoe
Essex

SOMEONE must manufacture a cable enabling the C16's 1531 cassette unit to be used with a Vic 20, or must be able to supply the parts to make a connector. Any suggestions, anyone?

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M. McCRAY

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3rd July 1985
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So what's the catch, we hear you say? How many tapes must I commit to buy? The answer is **none**. If you become a subscriber to our magazine (which is available only by post) then we enrol you as a member of our software club at no extra cost. It's then up to you whether you buy anything or not. There are no minimum purchase requirements.

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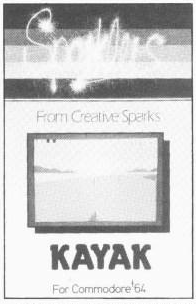
Loading challenge

CHALLENGE Research has introduced a budget priced azimuth head alignment tape for the Commodore C2N cassette unit, or any compatible data recorder. Like Interceptor Micro's' **Azimuth 2000** product, the Challenge tape allows you to gauge the head alignment of the tape deck until it is exactly tuned to the tape. This avoids loading errors caused by the various fast-load programs.

You'll have to supply your own miniature screwdriver to use the cassette, but at £4.95 it's certainly the cheapest way to set up your C2N properly. Contact Challenge on 0707-44063.

Wizards and water

TWO NEW 64 titles from Thorn-EMI's Sparklers budget range will be in the shops soon. **Merlin** and **Kayak** both cost £2.50. Merlin features the powerful magician battling evil spirits and the deadly Hellwasp in an attempt to complete his magic brew. Ingredients have to be snatched out of the air, and anti-spells have to be zapped before Merlin can win through to the next screen.



Kayak is a canoe slalom simulation, in which you have to control your craft through 25 gates and dangerous rapids, racing the clock to become the World Champion.

Contact Thorn-EMI, Thomson House, 296 Farnborough Road, Farnborough, Hants, 0252-543333.

More from Supersoft

SUPERSOFT'S latest batch of releases includes utility programs for the 64 and the C16-Plus/4.

Word Perfect is one of the first word processors to appear for the C16-Plus/4. It's a machine code program allowing up to two pages of A4 text to be entered, and displaying text on the screen exactly as it will be printed out. Maximum line length is 160 characters, and facilities include insert/delete, copy line, tab setting, margins and centering. Word Perfect costs £12.95 on tape or £14.95 on disk, and is also available for the CBM 64, at £17.95 and £19.95.

Music Master, the popular 64 composition package, has also been adapted for the C16-Plus/4.

One or both voices can be played using the QWERTY keyboard, and there are ten pre-programmed backing rhythms to accompany your compositions, as well as extensive editing facilities. Music Master C16 is available on tape or disk, at £12.95 and £14.95.

Instant Recall is a filing system for the 64, which allows you to store up to 30,000 characters of information. Particularly well-suited to holding club or hobby records, Instant Recall can be used with a suitable printer to create address labels or reports. Price is £17.95 tape, £19.95 disk.

Next month we'll take a look in more depth at some of these programs; meanwhile contact Supersoft at Winchester House, Canning Road, Wealdstone, Harrow, Middsx, 01-861 1166.

Solar's C16 strategy

SOLAR Software has launched a series of budget-priced games for the C16-Plus/4, and claims to have sold 15,000 units within a fortnight of launch. Solar's Brenda Shay explained that the games, all priced at £29.99, are conversions of successful Vic 20 titles by programmer John Shay. "John has written a routine which enables him to convert the Vic programs directly on to the C16. All the games are retitled to avoid confusion with the Vic originals." Titles include **Mission Mars, Suicide Run, Knock Out, Cruncher, Alien Attack,** and **Quick Draw.**

Solar Software also plans to produce a full-price C16 game in the near future, as yet untitled. The budget titles are being distributed by Centresoft, Leisuresoft, Lazer, and a range of smaller distributors, although Solar has not yet been able to conclude a deal with the chain stores.

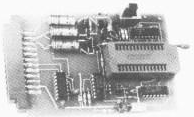
"We're not touching the 64 at the moment", commented Brenda Shay — "our last two games, **Monkey Magic** and **Jungle Quest,** didn't sell well despite good reviews and extensive advertising. We've now rereleased them as budget titles, but we feel that the 64 market is glutted; so at the moment we're concentrating on the C16, where there's still a demand for new games, especially at budget prices."

Contact Solar at 77 West Drive, Bury, Lancs, 061-761 1770.

German EPROMs

LIGHTWAVE Leisure has announced further details of their range of Commodore products imported from West Germany. **The EPROM Burner** allows you to plug a special Eraseable Programmable Read-Only Memory chip into a motherboard, and load it with your own programs, in effect creating your own "cartridge" software. The EPROM burner plugs into the user port of the 64 or C128, and the 8K or 128K mother boards plug into the cartridge port. EPROMs can be erased by ultraviolet light and reprogrammed. The motherboard, with EPROMs loaded, can make the software available to the computer in 8K sections at three different addresses.

Also available is a Test Board which exposes all data, address



lines and pilot wires from the cartridge port. Full instructions and operating software are included. The EPROM burner costs £54.95, 128K board £34.95, 8K board £12.95, and the test board £4.99. Phone Lightwave on 051-639 5050 for more details.

Pascal in words

PUBLISHERS Holt Saunders are to bring out a title dedicated to the **Oxford Pascal** package for the 64. (reviewed in our July issue).

Author Ian Sinclair has written over thirty books on using home computers, and claims that Oxford Pascal is the first good implementation of the language available. The foreword to **Oxford Pascal on the Commodore 64** is by OCS's Alan Wyn Jones and Tony Wilkes.

Contact Holt Saunders at 1 St Anne's Road, Eastbourne, East Sussex, BN1 3UN.

Digital dreams

CRL'S LATEST Commodore products include a video digitiser, first seen in this country at the Commodore Show in June, and a disk-based game. Both products are departures for the company, which has previously concentrated on cassette software.

The **Video Digitiser Module,** produced by the German firm Print Technik, costs £149.95, and is available mail order only until the PCW show in October. Plugging into the 64's user port, it enables signals from videotape or a video camera to be stored in digital form in the computer's memory. Images can then be printed out in black and white using the MPS-801, or in colour using a range of colour printers.

The image is displayed on the screen in four levels of grey, which can be coloured separately using the function keys. CRL say that later developments will allow the digitised pictures to be incorporated into users' own programs. The disk-based game is **Whizzard,** a sophisticated "platform game" available at £12.95 on disk only.

Reviews in due course. Meanwhile, contact CRL on 533-2918 01-533 2918.

Ultimate's Blackwyche

ULTIMATE'S next CBM 64 title will be **Blackwyche.** Continuing the adventures of Sir Arthur Pendragon, hero of **Staff of Karnath** and **Entombed,** Blackwyche is set on a haunted galleon. Sir Arthur's task is to free the ship of the curse which has fallen upon it, by finding the Captain. Under the spell of the evil Crystal Skull, the Captain languishes in the depths of the ship. Only Sir Arthur, with the aid of the ship's log and the magic Bell, can save him and break the curse. Blackwyche uses the same interactive animated graphics seen in Staff and Entombed, and will sell for £9.95.

Activated

INTERNATIONAL software company Activision has appointed a new UK managing director, and announced details of new CBM 64 titles.

Hugh Rees-Parnall, formerly of RCA/Columbia video, takes over as MD in September.

New games titles from Activision include **The Great American Cross-Country Road Race,** which allows you to plot your course across the States and outsteer your opponents in a fast-moving test of skill and endurance; and **Tour de France,** a bike-racing simulation based on the famous sporting marathon. Both retail at £9.99.

Contact Activision on 01-486 7588.

Precision plans on C128 software

PRECISION Software's versions of **Superbase** and **Superscript** for the C128 will include some unique facilities.

Planned for launch at the PCW show in October, the packages can be loaded into the C128 simultaneously, and can exchange information. Superbase and Superscript are already available for the CBM64, but Precision MD Nigel Lovett-Turner explained that programmer Simon Tranmer had managed to produce an even more powerful version of the programs by using the full potential of the C128. "Superscript uses a full 128K, with a large text area, but it's possible to load Superbase into that text area if you're willing to accept the reduction in size. The two programs can then act in a fully integrated way."

Moreover, since Superscript and Superbase are highly "disk-active" programs, the combination on the 128 can take advantage of the improved performance of the 1571 disk drive. "The 1571 is five times faster than the old 1541. Superbase and Superscript on the 128 are able to use 'burst mode', in which the 1571 operates twice as fast again".

Precision intends to keep prices of its 128 software within the budget of home users, so the 128 versions of Superbase and Superscript are to be priced at £99.95 and £79.95 respectively. Although packaged separately, Precision may offer the two packages together in a money-off deal at a later date.

Contact Precision at 6 Park Terrace, Worcester Park, Surrey,01-330 7166.

The Show is go

USE THE voucher printed below to get 50p off the admission fee for the Commodore Horizons Computer Show at the Novotel, Hammersmith, London, on Saturday and Sunday, 26th/27th October.

The show, arranged by **Computer Marketplace** in conjunction with **Commodore Horizons,** will offer something for every Commodore computer user; games players, applications software users and business users. Just cut out this coupon — photocopies are *not* acceptable — and you can get 50p off the entrance fee.

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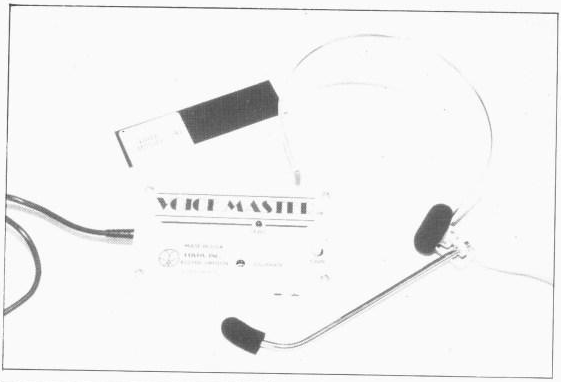
Talking of speech recognition . . .

Anirog's Voice Master for the 64 will digitise and replay your own voice, recognize speech and play music. ***Tony Mills*** *puts it through its paces*

ANIROG'S unique **Voice Master** gives the 64 a number of capabilities which would have been unimaginable when the micro was first released. For a start, it enables you to digitally record sounds and play them back at different pitches; it also responds to sound inputs, and can act as a musical instrument by playing tunes on the SID chip. How has all this been crammed into one package?

Voice Master consists of a headset including a microphone on an adjustable arm, a master unit in brushed aluminium which plugs into a joystick port, and software on disk.

Manufactured by Covox in the US, the whole system seems very well put together, and functioned with no problems at all.



Echo

It's best to start off by using the demo programs, which gives you an idea of Voice Master's abilities without going into all the complexities. On loading the software, you are invited to speak into the microphone, which plugs into the master unit. Using the function keys, you can then reproduce the sound you have recorded, either "straight", or with a gradually diminishing echo, or with an accelerating repeat which makes your voice higher and higher until you sound like Noddy.

The actual quality of the sound sampling is good, although you won't get the best from the unit unless you plug your 64 into a hif-fi amplifier. The length of the sample can be traded off against the quality, although the literature doesn't make clear what the maximum sampling time should be. Still, the quality of short samples is almost as good as that on well-known games like **Ghostbusters** or **Impossible Mission**. Using the main program, you can store up to 32 sound samples. Speed and volume of playback, as well as sampling rate, can be set by simple Basic commands. The voice recognition software works by comparing the frequency spectrum of a sampled input sound with that of a stored "template", produced through a "learning" routine in which you speak the required words several times, and the software produces an "average" against which to compare later input. The sounds can be displayed in the form of a bar chart.

On the voice recognition front alone, the Voice Master has impressive potential; for control of electrical equipment, security, word games, and so on. There are also musical applications made possible by the Voice Harp software; you must sing or hum into the microphone, and the program averages out the frequencies, and plays the SID chip to the nearest note, in a wide range of programmable tones and octaves. Music can be displayed on a stave, saved and edited, and printed out.

Potential

Perhaps the most interesting aspect of Voice Master, though, is that the voice samples it makes can be stored and saved in Basic programs in a fully transportable form — in other words, you can write a game using Voice Master sound effects, save it to tape or disk, and give it to a friend who will not need a Voice Master in order to get the benefit of the terrifc sound effects. Now anyone can produce games with speech effects such as those in **Ghost Busters,** without having to call in the services of expensive American software houses!

Voice Master may seem a trifle expensive at £59.95, but the potential of the device is only limited by your own imagination. Anirog has already put out several games incorporating Voice Master speech effects, so if you want a quick demo of its quality, just look out for **Out on a Limb, Five-A-Side,** or **Jump Jet.** More programs, including educational titles, are on the way.

Contest

Next month **Commodore Horizons** will have an exclusive competition in which you can win a Voice Master from Anirog. If you can't wait that long to get your hands on one, specialist retailers are already stocking the unit, and I would anticipate much wider availability once the 64 owners get the chance to see and hear this amazing device. ■

Hardware; Voice Master
Micro; CBM 64
Price; £59.95
Supplier; Anirog, Unit 10, Victoria Industrial Park, Dartford, Kent, 0322-92518

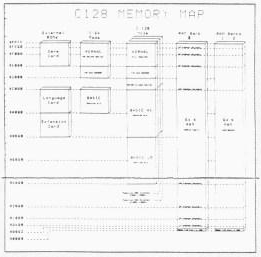
C128
PRICE EXCLUSIVE

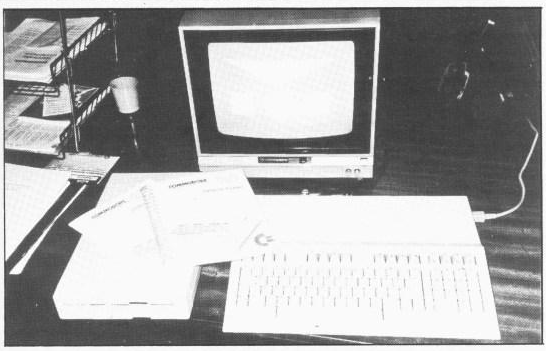
*The news you've all been waiting for is out — **Commodore Horizons**, the only magazine represented at the trade launch of the C128, reveals the all-important retail price*

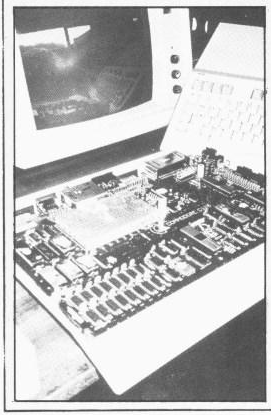
COMMODORE'S trade launch of the C128 revealed that not only is the machine a powerful competitor in terms of facilities — it's a winner on price, too. The C128 will be available from 1st of September at £269.

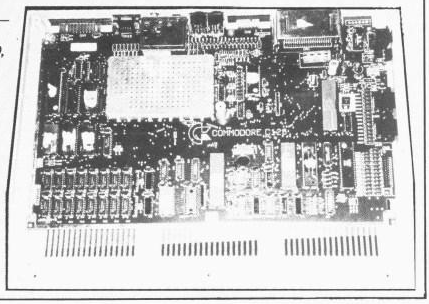
As most readers will already know, the C128 is designed to complement the existing range of CBM machines, not necessarily to supplant them. The 128 operates in three modes;

- 64 mode reproduces all the features of the CBM 64. It's completely compatible with all CBM 64 software and hardware, making it possible to use 64 cassettes, disks, cartridges, printers, modems and monitors.
- 128 mode has 119.5K RAM available for Basic programming. The new Basic dialect, V 7.0, has over 140 commands, including commands for sound, music, graphics and animation which are sadly lacking on the 64. 128 mode also has a built-in machine language monitor, forty or eighty column screen display, and use the 14-key numeric keypad.
- CP/M mode is designed for running professional business software written in the CP/M format. Most CP/M software is written to use 80 column screen display. However, the forty column screen display can be selected, and scrolled to display the full eighty columns. Disks in the IBM, Kaypro, Osborne and other CP/M formats can be used with the 1571 disk drive.









The C128 revealed — exclusive interior shots reveal the Z80, SID, RAM chips, bank-switching controller, I/O circuitry, video chip and 8502. The screen graphics were produced with a 10-line program; the memory map shows the machine's full programming potential.

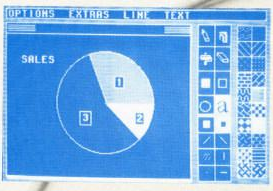
To make the most of the 128's facilities, you will probably need an eighty-column 1900 monitor and the 1571 disk drive, which runs 5-10 times faster than the 1541. Although no details of prices for these have yet been released, it appears likely that the complete 128/1571/1900 system will cost around £650. The 1900 monitor comes in two models, the 80-column monochrome 1900-M and the 40 or 80 column colour 1900-C.

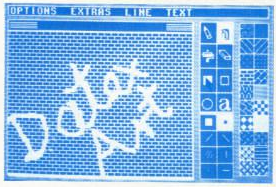
The CBM 64 will continue to be sold at £199, though whether it can complete with the 128 at this price remains to be seen. Commodore's plans seem to rely on making more money on peripherals than on micros; market forecasts indicate that although the *size* of the micro buyers market is decreasing, the *value* is going up as more users buy printers and disk drives rather than cassette decks and joysticks. ■

You've never seen anything like it.

A Mouse that's light years ahead of anything else of its kind, with the best graphics software ever written for the Commodore 64, 128 and SX64.

It's packed with features – you'll be amazed at what you can do with charts and creative designs.





We've given the Mouse a wide variety of brush and spray shapes, different screen textures and a whole palette of pre-programmed background patterns.

(You've the option of designing your own, too.)

There's a huge choice of colours, 16 foreground and 16 background, useable in any of 256 combinations.

You can draw shapes, fill areas with textures and special patterns, and move designs around.

Or put clear, attractive business graphics on paper for professional reports, charts and newsletters.

With clear on-screen icons and at-a-touch pull-down menus, every operation is kept perfectly simple.

Drawing a circle, for example, is a simple matter of marking the centre, moving the mouse outwards until you've found the correct size and then pressing the 'select' button to plot the circle.

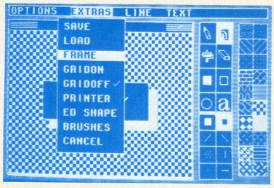
Put all that together and you've a stunning graphics package – at the touch of a finger.

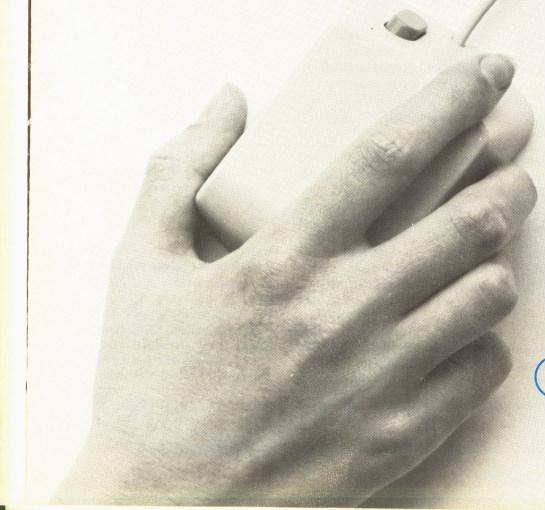
It will even integrate happily with our forthcoming business software.

The Mouse comes complete with disk and cassette software, full instructions and a price tag of just £74.95.

Stunning graphics at a touch

Of course, we have to own up and admit that we have a rather famous rival. A perfect snip at a little under £2,000.





Datex Mouse. There's nothing in the world to touch it.

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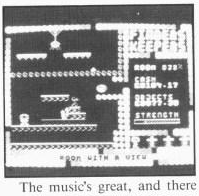
No sore loser

A surprisingly sophisticated arcade adventure with lots of graphic and sonic gimmicks, Finders Keepers is a conversion of a successful Spectrum title, if memory serves correctly. The sprites in this one are excellent; you control a little knight, making his way through Sprite-land in search of treasure and cash in order to win the hand of a beautiful princess, and a place on the "Polygon Table".

Apart from the usual left/right/jump controls, there are also options to get, drop or trade objects. Since the amount you can carry is limited, you must find a trader every so often to convert your findings into cash.



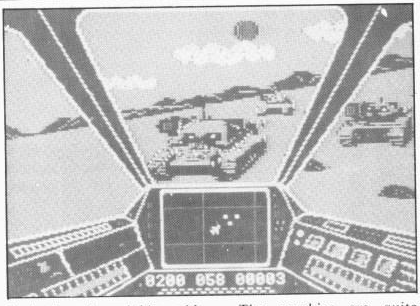
The music's great, and there are lots of unexpected bonuses such as three-dee mazes, lots of good ghoulies, a hypnotic swirling coloured border and plenty of status indicators to keep your eye on. Excellent value for money.

Program: Finders Keepers, 64
Supplier: Mastertronic
Price: £1.99
Graphics: ★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★

Plane amazing

An incredibly impressive air battle simulation, Skyfox goes to show that the 64 is still capable of being coaxed to even greater heights of graphic sophistication.

The Skyfox fighter (it says here) is armed with rapid-fire lasers, heat-seeking missiles and defensive shields. Your mission is to fight off the enemy forces attacking your asteroid base. There are several mission selections available; training for air combat, for ground combat, for both, or the real thing, with various combinations of enemy tanks, planes and motherships.

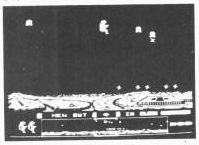


The graphics are quite stunning; big, detailed enemy vehicles seen from the pilot's point of view, with convincing scrolling and fiercesome zaps and explosions. There are lots of little extras, such as guided missiles, heads-up radar displays, altimeter, fuel readout, and so on. This isn't quite enough to make Skyfox a satisfying "simulation" — it's certainly a good arcade game, but if you want something realistic go for DI's Fighter Pilot. Still, brain-blasting fun for shoot'em-up fans.

Program: Skyfox, 64
Supplier: Ariolasoft
Price: £12.95
Graphics: ★★★★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★★

Defend or die

At first sight **Dropzone** appears to be just a **Defender** copy, and the temptation is to pass over it. On reflection, though, how many good versions of Defender are there? Apart from Alligata's immaculate **Guardian**, I can't think of a good version for the 64.



So Dropzone stands out as a good implementation of the basic theme, with enough original twists to make it interesting. You control an astronaut armed with a jetpack, laser and smart bombs. The mission is to fly over the lunar landscape, catching humanoids and destroying the alien enemies. These come in many varieties, including slow-moving bugs, faster mutants, lightning-spitting clouds, swirling pods and fierce-some saucers. All are intent on smashing you into a zillion pieces (with a great explosion effect) and preventing you from depositing the humanoids at the lunar base. With the usual bonus lives, powerful smart bombs, zappy sound effect and high-score table, Dropzone is a good example of joystick-bashing arcade action which demands the fastest and most precise reactions.

Program: Dropzone, 64
Supplier: US Gold
Price: £9.95 cass, £14.95 disk
Graphics: ★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★

Over the moon

Here we go, here we go, here we go, indeed. **Five-a-Side Football** is a follow-up to Slap Shot, the ice hockey simulation, and looks very similar. The small players are fairly well detailed, but don't move very realistically; from side to side, they're OK, but move UP or DOWN the field and the speed of movement goes peculiar. The screen view scrolls

to follow the action, as in Commodore's **International Soccer**, and the five-man teams (two players or one against the computer) can shoot, tackle, and dribble quite convincingly, under joystick control.

There are no corners or throw ins, but you can foul your opponents (they land with a satisfying THUMP) and bounce balls off the side walls.

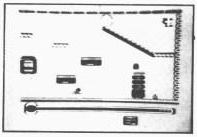
Extra features include a penalties option, which is poor graphically and not much fun to play, and software speech which could be better. When the crowd sings "Here we go, here we go ..." before the kick off, it sounds more like one man sitting in Anirog's office shouting into a Voice Master speech digitiser — which, in fact, it is. So the speech doesn't add much to the atmosphere.

Quite playable, though not as polished as it might have been.

Program: Five-a-Side Football, 64
Supplier: Anirog
Price: £5.95 cass. £8.95 disk
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay ★★★★★★

What is this Thing?

Zoooiiing! Gremlin's latest 64 game introduces the best new hero for ages, Thing (on a Spring), who bounces through this arcade adventure accompanied by suitably zany sound effects. It has to be said that although the graphics are great, what really makes this game is the sonics; marvellous Country & Western/Punk music and zippy sound effects.



Thing's job is to bounce through the toy factory, searching for the jigsaw pieces which will give him a clue how to destroy the Mad Goblin. The factory is made up of the obligatory ladders, platforms, slides, disappearing surfaces, and so on, and the Goblin's servnts, ghouls and factory machines, are all out to stop Thing and make him rust up. In order to thwart them he must leap around them, and search out oil supplies.

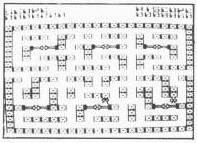
The factory is on several levels, each of which is several screens in width. The levels are connected by lifts, which I can't get to operate (probably because I haven't found the hidden switches). However, Level One is challenging and zany enough, and I assume it only gets better. Well above average for this sort of thing, and worth getting for the soundtrack alone.

Program: Thing on a Spring, 64
Supplier: Gremlin Graphics
Price: £7.95
Graphics: ★★★★★★★
Sonics: ★★★★★★★★★
Gameplay: ★★★★★★★

Trouble with bugs

Doodle-Bug has a marvellous bit of artwork on the cover, depicting two insectoid warriors on sky-scooters chasing each other around futuristic towers. Now, since this is a game for the unexpanded Vic, it wouldn't be fair to expect anything that exciting of the game, and in fact what we have here is a sort of cross between **Pac-Man** and **Ladybug.**

Your little buglet has to make his way through a maze full of food parcels, picking them up as he goes. Chasing after him are several nasty buglets — you can select the number from one to five. Your only chance to avoid them is to use the fact that they cannot pass through the turnstiles dotted around the maze.



Push through them and they flick around, forcing your enemies to find another path to get at you. But the baddies are very intelligent, always taking the shortest route to you.

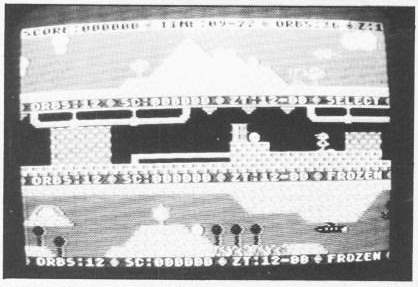
Nicely programmed, and perfectly good fun.

Program: Doodle-Bug, Vic
Supplier: Mastertronic
Price: £1.99
Graphics: ★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★

Time for the C16

This one's clever — why hasn't anyone thought of it before? Although the main idea is pretty jaded — a sort of **Scramble** game through various stages, avoiding fire from enemy craft and destroying targets along the way — the gimmick is that **Timeslip** gives you three stages on the screen all at once.

In the top screen, you pilot a fighter over a mountain range: the middle, a jetpacker through tunnels: the bottom, a submarine through underwater caverns. In each scene there are twelve Time Orbs to destroy. You have twenty-four subjective hours to clear all three screens, but if you lose too many lives the three time-zones will slip out of synchronisation. Only by clearing all three and resetting the time readings to nought you can save the universe. You can gain time by hitting fuel drums or barrels.



Decent graphics and piercing ZEEP ZEEP sound effects. Good fun for arcade fanatics.

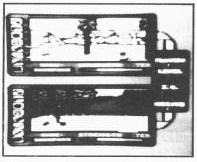
Program: Timeslip, C16
Supplier: English Software
Price: £7.95
Graphics: ★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

I spy again

Spy Vs Spy One — **At the Embassy** — introduced a revolutionary split-screen two-player concept and unusually good graphics. The sequel, **The Island Caper,** retains much of the flavour of the original, buts adds to the players' options.

Again, the screen is split into three parts; the top and bottom half show the current locations of the Black and White spies, and indicators at the sides show their status and the weapons they're using. The aim of the game is to find a secret weapon hidden on the island, then to escape by submarine. Stray too far through the scrolling scenery and you'll end up in the sea.

Again, you can lay traps for your opponent, but in The Island Caper you have to create the traps yourself, using various tools and whatever objects come to hand — including snapping crabs. You can also tunnel under



your opponent, turn trees into catapults and so on.

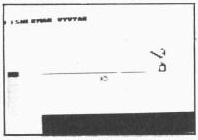
This pre-production version looks every bit as good as the first game, with excellent graphics and animation and fascinating gameplay. However, it might have been nicer to see the same programming techniques applied to a new idea.

Program: Spy Vs Spy 2: The Island Caper
Supplier: Beyond
Price: £9.95
Graphics: ★★★★★★★
Sonics: ★★★★★★★
Gameplay: ★★★★★★★

Wet fish

Alligata must have some sort of a death-wish. First the crummy **Knockout,** now this monstrously boring effort. **Match Fishing** is supposed to be a simulation of the thrills of competition angling — all it captured for me is the sheer tedium of spending hours half asleep on a river bank.

After tediously selecting the number of players, entering the names, choosing the type of bait,



tackle, line strength and so on, you are given a description of the length of riverbank which has been assigned to you. Switching to an admittedly nicely-drawn graphic screen of the riverside, there's then nothing to do but wait until one of the peg numbers flashes on and off. You then rouse yourself from your lethargy long enough to hit the appropriate number key, and you're rewarded with the most pathetic representation possible of an angler reeling in an embarrassed-looking tiddler.

If I was Jack Charlton, I'd take the money quick, disappear off to a shady riverbank somewhere, and try to forget the whole thing.

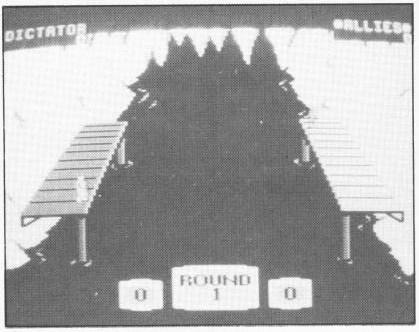
Program: Jack Charlton's Match Fishing, 64
Supplier: Alligata
Price: £6.95
Graphics: ★★★★★
Sonics: ★
Gameplay: ★★

On the Beach

Criticisms of the original **Beach Head**, claiming that despite the impressive animation and graphics, the game did not stand up to extended playing, did little to stop it notching up big sales. I expect things will be the same with **Beach Head 2 — The Dictator Strikes Back.**

As in the original, there's a great deal of violence involved as your task force attempts to defeat the baddies — this time the screams of the wounded add to the fun — "I'm hit!", "Medic!" and so forth.

The stages include troops trying to destroy machine gun emplacements, escaping prisoners crossing the screen under fire from tanks and armoured cars, a helicopter



escape, and an incongruous battle with throwing-sticks across a ravine. As you'd expect, there are one or two player options and various levels of difficulty.

Overall this doesn't add much to the original, but thousands of players will want to get it anyway.

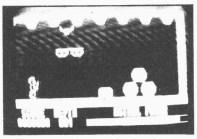
My major objection is that each stage takes too long — although I suppose that if you enjoy this sort of game, then this is a good feature.

Adding software speech to a game gives it an extra dimension, but the gimmick is bound to wear off soon. Hopefully the American programmers will then turn their undoubted skills towards original ideas, rather than rehashing old ones. Beach Head Two deserves to do well, but if there's a Beach Head Three, I'd like to think it could be ever better.

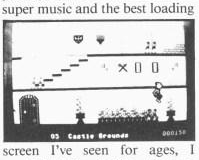
Program: Beach-Head 2; The Dictator Strikes Back
Supplier: US Gold
Price: £9.95
Graphics: ★★★★★★★★
Sonics: ★★★★★★★
Gameplay: ★★★★★★

Warlocks

One of the first decent arcade adventures for the C16, **Sword of Destiny** manages to pack quite a lot into 16K. As usual with this sort of program, there's a lot of scene-setting dealing with evil warlocks, brave warriors, Abysses of Death, magic, mystic energy and stolen hearts, but you don't want to know that — you just want to know what you get to kill, don't you?



The warrior is depicted by a large, single-colour sprite, and his way are tin soldiers, forbidding ramparts and dangerous leaps, but the brave little chap take them all in his stride. The animation, particularly of Rupert himself, is very good, but the backgrounds leave something to be desired. The game will obviously appeal more to younger players, and won't set much of a challenge to arcade fanatics. Although the whole package is very nicely done, with super music and the best loading



screen I've seen for ages, I couldn't help feeling that to the baddies include ghosts, skulls, serpents and so on. Your magic sword soon makes short work of them, though, adding to your reserves of power. There are many flashing objects to be found, each one of which opens up the way to the next part of the Abyss. If you find yourself stuck at any level, you can take a ride courtesy of a hot air flue, which will bounce you up to another level.

Joystick or keyboard options, and reasonable sound effects and music, complete what is a decent C16 offering. Also available from Gremlin for the C16 is **Dork's Dilemma,** which is playable, but not so sophisticated graphically.

Program: Sword of Destiny, C16
Supplier: Gremlin Graphics
Price: £6.95
Graphics: ★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

Teddy boy

The Daily Express's popular little cartoon bear, Rupert, is 65 this year, and presumably as part of the celebrations his friends are having a party. But, alas! Rupert's lost his friends, and to find them he must follow a trail of party invitations through the toymaker's castle. In relieve the tweeness Rupert should have been allowed to go mad with a chainsaw in the middle of the teaparty. I know, I'm cynical.

Program: Rupert & the Toymaker's Party
Supplier: Argus Press Software
Price: £7.99
Graphics: ★★★★★★★
Sonics: ★★★★★★★
Gameplay: ★★★★★

Charts

Top Twenty CBM 64 Games

1	(1)	Dambusters	Sydney/US Gold £9.95
2	(—)	Elite	Firebird/Acornsoft £14.95
3	(—)	Way of the Exploding Fist	Melbourne House £9.95
4	(2)	Softaid	Softaid £4.99
5	(3)	Pitstop 2	Epyx/US Gold £9.95
6	(6)	International Basketball	Commodore £5.99
7	(7)	Theatre Europe	PSS £9.95
8	(—)	Rocky Horror Show	CRL £8.95
9	(—)	View to a Kill	Domark £10.99
10	(8)	Impossible Mission	Epyx/US Gold £7.95
11	(—)	Jet Set Willy 2	Software Projects £9.95
12	(4)	Herbert's Dummy Run	Micro-Gen £9.95
13	(14)	Cauldron	Palace £7.99
14	(12)	Bounty Bob Strikes Back	Big 5/US Gold £9.95
15	(9)	Spitfire 40	Mirrorsoft £9.95
16	(—)	International Tennis	Commodore £10.99
17	(—)	Drop Zone	Microprose/US Gold £9.95
18	(15)	Entombed	Ultimate £9.95
19	(10)	Grog's Revenge	US Gold £9.95
20	(—)	Strangeloop	Virgin £8.95

Bubblers

1	On Field Football	Activision £10.99
2	Amazon Warrior	New Generation £7.95
3	Graham Gooch's Cricket	Audiogenic £9.95
4	Tim Love's Cricket	Peaksoft £8.95
5	Knockout	Alligata £6.95

Top Ten CBM 64 'Non-games'

1	(1)	Mini Office	Database Publications £5.95	Business
2	(—)	Music Studio	Activision £14.99	Utility
3	(3)	Simon's Basic	Commodore £50.00	Language
4	(—)	Charlie & The Chocolate Factory	Hill McGibbon £8.50	Education
5	(2)	"O" Level (series)	Commodore £4.99	Education
6	(5)	White Lightning	Oasis £14.95	Utility
7	(6)	Mr. T	Ebury £9.95	Education
8	(4)	1st Steps Mr. Men (series)	Mirrorsoft £9.95	Education
9	(—)	Entreprenuer	Collinsoft £19.95	Business
10	(7)	Pan "O" Level (series)	Hill McGibbon £14.95	Education

Bubblers

1	Forth	Romik £14.95	Business
2	Games Creator	Mirrorsoft £12.95	Utility
3	Machine Code Tutor	New Generation £14.95	Utility

Top Five C16 Games

1	(1)	Gremlins	Adventure International £9.95
2	(—)	Dork's Dilemma	Gremlin £6.95
3	(2)	BMX Racers	Mastertronic £1.99
4	(—)	Dark Tower	Melbourne House £5.95
5	(3)	Blagger	Alligata £6.95

Bubblers

1	Tower of Evil	Thorn EMI £5.95
2	Olympiad	Tynesoft £6.95
3	Flight Path 737	Anirog £6.95

Top Five Vic 20 Games

1	(1)	Rockman	Mastertronic £1.99
2	(3)	Flight Path 737	Anirog £6.95
3	(—)	King Tut	Mastertronic £1.99
4	(2)	RIP	Mastertronic £1.99
5	(4)	Hunchback	Ocean £6.90

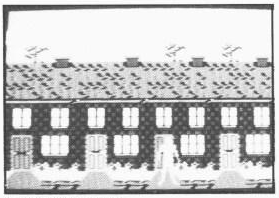
Bubblers

1	Mickey the Bricky	Firebird £2.50
2	Doodlebug	Mastertronic £1.99
3	Football Manager	Addictive £7.95

All data compiled by RAM/C from a panel of specialist dealers.
Sales period — 4 weeks prior to July 5th 1985

FRANKIE GOES TO HOLLYWOOD

ZTT mopheads Frankie decorate the box — but the central figure in Ocean's game is a shadowy version of YOU. Does ***David Fox*** *love it or hate it?*



★ *Where it all begins...*

BANG! Frankie went to Hollywood and never looked back. In what must the first ever case of "You've heard the record, now buy the computer game", Ocean has come up with a program that's sure to be a hot hit. Thankfully, it isn't a case of ladders-and-platforms, with little Holly Johnsons skipping around in search of gold discs — **Denton Designs**, the programmers behind **Shadowfire**, have put all their expertise in advanced programming techniques such as windowing and icons into **Frankie** the game.

Opening with the familiar chugging rhythms of **Relax**, the game allows you to control the shadowy figure representing your undeveloped personality. The first scene is a row of houses in Mundanesville — your goal, the legendary Pleasure Dome. There are over sixty tasks to complete along the way, and you'll need imagination, inventiveness and quick reactions to complete them all.

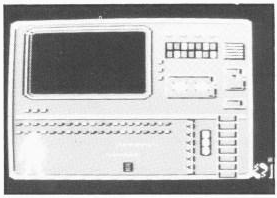
To attain the Pleasure Dome, you must score 99000 Pleasure Points — which are awarded each time you complete a task — and reach the top on each of four bar charts shown on the right hand side of the screen. These represent your Love, Pleasure, War and Faith factors, and once they are at maximum you will have become a complete person.

As you move through the scenes, the animation of the character and the brilliant windowing effect causing you to goggle with awe, you should examine the detailed roomscapes carefully. Use the joystick or keyboard to make your figure reach out for various objects. Touch a cupboard or chest of drawers, and you'll see a window opening up on the screen beside you. You can then use the joystick to move the pointer to the various objects in the window, and select the Quit icon the move on.

There are fifteen different objects to find, each of which can help you to reach the Pleasure Dome. Most of them suggest their own uses: a flak jacket, a bottle of milk, a videotape and so on. Others will help you to balance your personality factors. You can only carry eight objects at a time, and each can only be used once. Use an object at the wrong time, and a window will appear bearing the message "A — whatever — is of no use here", and you'll have lost it. So, when you study your inventory (by pulling back the joystick and pressing fire), make sure that you select the right object to use.

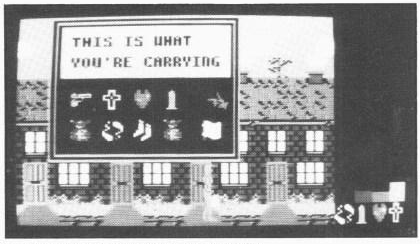
Moving from room to room is accomplished simply by moving to a door, standing in front of it and pushing the stick forward. The screen then windows open to show the new room.

The scenes include living rooms, kitchens, hallways and gardens, each full of the mundane objects of everyday life. But you must experiment with everything to find how it can aid you in finding the Pleasure Dome — the

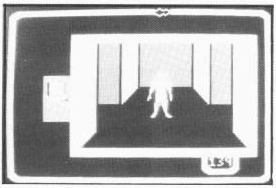


★ *Try the switches on the computer*

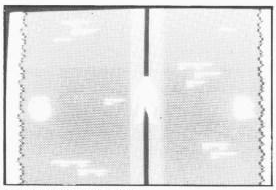
★ *War! What is it good for?*



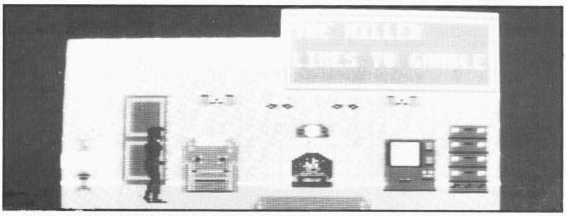
★ *A maximum of eight objects can be carried*



★ *In the corridors of power*



★ *Facing the war-heads*



★ *Collect the clues to solve the murder mystery*

GAME: Frankie Goes to Hollywood
MICRO: CBM 64
PRICE: £9.95
SUPPLIER: Ocean

telephone, light switches, furniture, and the various objects.

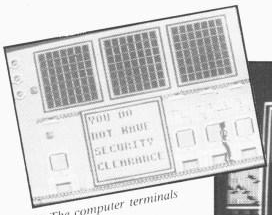
Things really take off when you insert a video into the TV system, and find yourself plunged into a series of arcade-type games. In these you have the chance to increase your personality ratings by batting the flying icons at a target, or you can shoot at famous politicians, take part in a battle between Reagan and Gorbachev, save Merseyside from bombers, play games with a computer terminal, and more.

You'll soon realise that there are ways and means of making your way around the inner rooms of the Pleasure Dome. Once you find your way into the Corridors of Power, you can map the labyrinth and plot your way to the Ultimate Screen, the Pleasure Dome itself.

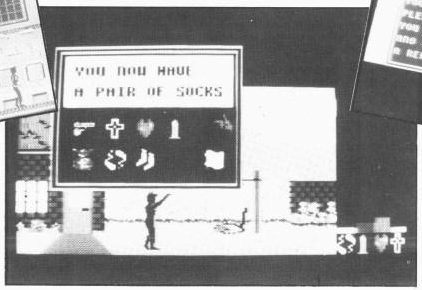
There's also a murder mystery to solve, in which you must collect the clues which appear at random, return to the scene of the crime, and identify the killer.

However much you play Frankie, there seems to be more to find. Thankfully, although Denton Designs liaised with the developer of the Frankie philosophy, **ZTT**'s Paul Morley, they didn't feel obliged to include all his ideas in the game — such as a section designed to be thoroughly boring (because life can be). Instead, the most sophisticated graphics, sound and operating systems have been brought together to create a game which is stunning at first sight, and which continues to provide plenty of excitement the further you progress.

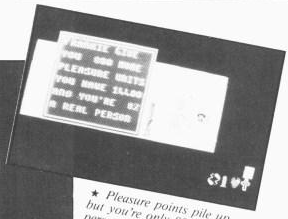
I can't wait for the 12" version. ■



★ *The computer terminals*



★ *The inventory window lists your possessions*



★ *Pleasure points pile up but you're only 8% a real person*

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Melbourne's quest

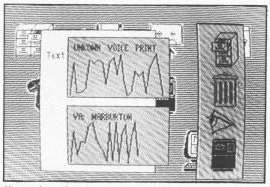
***Ken Matthews** gives you the chance to win copies of the new text adventure, and investigates the icon-driven Fourth Protocol game*

I've managed to drag myself away from **Elite** long enough to take a long and sober look at three of the latest adventures to hit the market and, with so little space to play with, I'll get straight on with the job.

First up is **The Fourth Protocol** from Hutchinson, based on the superb novel of the same name by Frederick Forsyth. The game is centred around a KGB plot to smuggle a nuclear device into the UK and detonate it before the 1987 election, blame the 'accident' on a US base and replace the Thatcherite junta with a hard left government dedicated to withdrawal from NATO.

You play John Preston, new head of the section of MI5 responsible for the security of buildings and staff throughout '5'. In the first part of this thriller some NATO documents have been leaked and you are slowly drawn into a chase to uncover the traitor.

Should you gather the required information in part one and manage the more routine tasks, you will be seconded to MI6 and



allowed to brave the London traffic to track down the bomb before disaster strikes.

Part three is a simple task — defuse the device using the information gained in the first two games. You will be backed up by the SAS but, not unnaturally, the KGB are quite keen that you should fail in your efforts and will do all they can to ensure that things go with a bang!

The first two parts are completely icon driven, but the menus are very simple to understand and quick to use. It is inevitable that the game will be thought of in comparison to **Shadowfire** but, personally, I feel that The Fourth Protocol is greatly superior in all respects, not least the pace of the action, so any of you put off by icons — give this one a chance.

In game one you won't need to leave your office at first, as memos and reports appear on the VDUs, and the phone keeps you in touch with your team of watchers until a memo from 'C' changes the course of your career — if you've got things right.

Game two gives the traditionalists a chance to get the map drawing gear out, crack codes and surround yourselves with scraps of paper and cigarette smoke as you blunder around the capital in search of the clue to discover the location of the bomb and get the password to part three. The icon system can be a little cumbersome here for simple movement that is normally accomplished by one letter commands but this is more than compensated for by the icons used to manipulate items, thus avoiding a frustrating search for the right phrase to achieve success.

The highly original plot and inspired programming have combined to produce the most absorbing adventure I have seen for a long time — it deserves to be a best seller as much as the novel on which it is based.

The second offering this month is completely different. Tynesoft's **Supergran the Adventure**, which is aimed at the very young adventurer.

The aim of the adventure, like the TV series, is simply to defeat the evil Scunner Campbell and his band of cronies. The game has been written by AI's Brian Howarth and has graphics and animation of the same high standard as **Gremlins**.

The adventure itself appears to be a pot pourri of situations from the TV series which left me at a complete loss from the start. So, after a visit to hospital, the sweet shop and a frantic search for porridge, I bade farewell to Supergran and decided to leave it to avid fans of the demonic old lady.

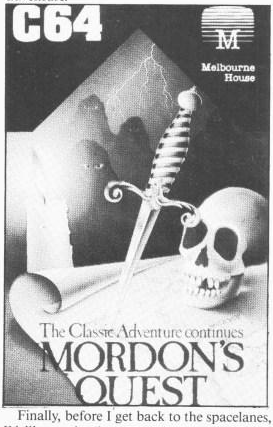
Back onto safer ground, we will round off this month's reviews with a brief look at **Melbourne House's** follow-up to **Classic Adventure — Mordon's Quest**.

Pygmies

Your task in this game is quite clear, you must simply save the universe from destruction! The game has over 150 locations — which puts me a little over a third of the way through — and boasts a plot which carries you from the distant past to the far future to assemble parts of the immortality machine that will allow Mordon to regain his grip on things and allow you to get your grip on untold treasure.

This epic quest begins in a mist shrouded house (reminiscent of the underground station of similar name which may have inspired the title) and leads, via quicksand, jungle and persistent pygmies, to an ancient city where things really begin to come together.

The vocabulary of the game is claimed to be over 400 words and, as yet, I've had no difficulty in communicating. A great deal of time has been spent making the location descriptions long and varied enough to maintain the atmosphere. Thankfull, I've also yet to find a Melbourne bug like those that plagues **Sherlock** and **The Hobbit** — Mordon's Quest has done a lot to restore my faith in the antipodean adventure — it's a good, solid text adventure.



Finally, before I get back to the spacelanes, I'd like to thank you all for your letters — please keep them coming — particularly Jim MacBrayne of Glasgow who sent me an excellent text adventure written by him called 'Excalibur' which is a joy to play and deserves a plug here. It can be obtained from Supersoft, Winchester House, Canning Road, Harrow HA3 7SJ.

A lot of you ask in your letters and on the phone how to get into reviewing software and writing for magazines and I tell you about the necessary skills of literary genius, wit, charisma, innate good looks, modesty, etc. — seriously though, we'd love to hear your adventuring anecdotes — so much so that we're offering prizes of tape copies of **Mordon's Quest** for the half-dozen most interesting or amusing entries chosen by our 'impartial panel of experts', so hurry up and set pen to paper.

Next month I hope to find space for some hints and tips so let us know what you need to see! ■

· COMMODORE 64 ·

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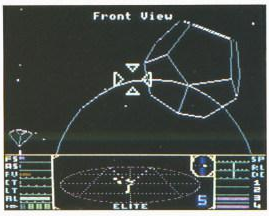

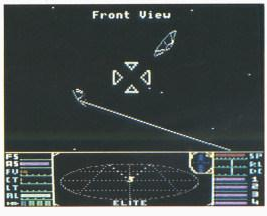

Elite – the ultimate, award-winning space challenge.

Once the privilege of BBC and Electron owners, Elite now takes a giant leap forward – onto the COMMODORE 64. (There'll be versions for the 48K Spectrum and Amstrad soon).

OUT IN DEEP SPACE, THESE REVIEWERS FACED THEIR TOUGHEST TEST.

Already tested by the intrepid explorers of the Commodore press, here – breathlessly – are just a few words from their advance battle reports.

"The Final Frontier?"
(Mega Game, Your 64, June 1985).

"My favourite... as absorbing and challenging as the original."
(Commodore Horizons, June 1985).

"To explain every element of Elite would take a book... **you'll run out of energy** long before Elite runs out of things to show you."
(Commodore Computing International, June 1985).

"A brilliant game of blasting and trading... truly a mega-game... **the game of a lifetime.**"
(Gold Medal Award, Zzap! 64, May 1985).

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GOLD MEDAL EDITION

State of the Union — state of the art

Geoff Brown and Tim Chaney of US Gold run the highest-profile software company in the UK — yet the software comes from the States. ***Christina Erskine*** *finds out why*

"IT'S the thrill of getting into the charts that attracts me — getting the titles in there and watching them climb up. I was an unsuccessful musician for ten years, and all I wanted then was a chart hit."

So says Geoff Brown, who, as managing director of **US Gold**, is certainly enjoying chart success these days. Software charts have been heavily criticised for inaccuracy for a long time now, but since US Gold's titles feature strongly in *all* of them, it's probably fair to assume they're not too far wrong on that score.

US Gold is run by Geoff and general manager Tim Chaney. If Geoff comes across as the more creative thinker of the two, Tim has his feet firmly planted on the ground. He has a strong track record in home computers, having worked at both **Commodore** and **Camputers**.

The company was started by Geoff and his wife Anne, almost by accident, as part of their main business, Centresoft, a software distribution company.

Along with the usual hits of the day, a few Atari titles straight from the US were trickling through to Centresoft. Unfortunately, they never trickled out of Centresoft into the customer's pockets — at £29.99 they were far too expensive despite their very high quality.

Goonies — the game of the Spielberg film

Tim Chaney (l) and Geoff Brown — "We pride ourselves on our high standards"

"Everyone liked the stuff, but selling it was a nightmare," said Geoff. "Then when the Commodore 64 began to become popular we began to import for that too, but of course the 64 software had to compete with British titles, such as **Llamasoft**'s, and the need for a price cut became even more urgent.

"We approached companies such as **Datasoft** and **Kosmi**; we guaranteed them volume sales, in return for allowing us to manufacture, package and set our own price. It was like climbing Mount Everest with only one leg — they simply weren't interested."

Beachhead

Geoff badgered and battered the two US companies into submission. He eventually managed to squeeze manufacturing rights from them as well, which meant that the newly invented fast loading systems could be incorporated. The product began to move.

In January 1984, on a trip to the US, Geoff popped in on **Microprose** (renowned for strategic simulation games) and a tiny outfit called **Access**.

"They were just two guys in one room, and no-one had ever heard of them, but they did have a title called **Beachhead**, which I thought would do well in the UK," explained Geoff.

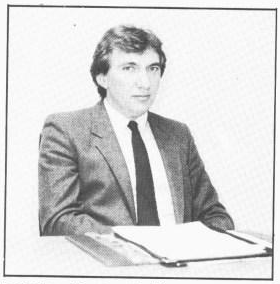
Deals were signed with both Microprose and Access. Centresoft now had exclusive rights to the products of four US companies, all of a quality rarely seen on the Commodore 64 in this country.

"So far it had all been a terrific uphill struggle just to sign the deals — now I had to make sure it was worth it by selling the games."

Geoff reckoned the best way to promote the titles was to give them a corporate identity — and the name **US Gold** seemed to fit the bill.

He was right to back Beachhead, as well. The game became hugely successful almost overnight, and as the games market in the US began to slow down the American software houses realised that they would need to export their packages and open up new markets to keep growing. US Gold was snowed under with offers of American software.

By this time, Geoff and Anne's creation was



beginning, Frankenstein-like, to get out of control. US Gold's catalogue was chaotic, they had done absolutely nothing about Britain's biggest selling machine, the Sinclair Spectrum, and Centresoft, their original business was beginning to suffer.

Each problem was tackled in turn. To preserve the corporate identity ideal, subdivisions of US Gold, such as All American Adventures, Transatlantic Simulations and the new educational label KIDS were created.

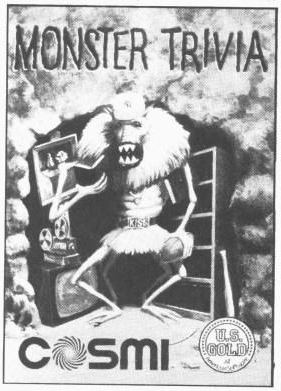
Ocean

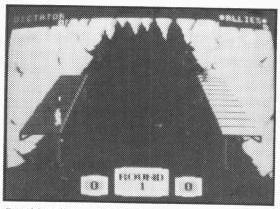
They approached **Ultimate** and **Ocean** regarding licensing out conversions of the titles. Ocean took up the idea with enthusiasm, and took the pressures of conversion work and advertising work from the hard-pressed Geoff and Anne Brown. This move was important not just for different machines, but because with the increasing sophistication and programming length of the US titles, conversions from Commodore disk to cassette were becoming less straightforward.

Lastly, to ease the demands on their time, they approached Tim Chaney to join them as general manager, which he did in January 1985.

Tim enjoys seeing US Gold dominate the charts just as much as Geoff, but for Tim, it's because charts means sales.

Selling is Tim Chaney's forte. He joined Commodore early in 1982, and was out on the road with the Vic 20, at a time when most





Beachhead 2 — the final stage

people thought computers were only for the boffins to take apart and rebuild again.

In August 1983, he moved to Camputers as sales manager, and he stayed at Camputers until the bitter end. "People seem to forget that the Lynx computers may not have been too popular in Britain but we had large markets in Turkey, Scandinavia and France," he comments.

After Camputers crashed, he returned to Commodore as national accounts controller. He remembers admiring the excellent software appearing from US Gold at the time, and needed very little persuading when asked to join the company.

After the thrills and spills of Camputers and its Lynx, sure US Gold has provided little in the way of challenge by comparison?

"Well, yes, it's certainly true to say that I had no idea how much more powerful US Gold would turn out to be," said Tim. "But again, we're just as vulnerable here as anyone else. We're completely dependent on good US software continuing to come through. But then, it doesn't necessarily follow that all good American software is going to come to US Gold."

Apart from the contacts made by Geoff Brown in the early days, US Gold do use three people in the US working on its behalf to ensure that the best doesn't get overlooked. The recent Walt Disney and Epyx deals were 'sourced' by their US scouts.

The Epyx contract takes over existing and forthcoming titles, so that **Impossible Mission**, **Pitstop II** and others first imported to CBS will be repackaged to include the familiar US Gold badge style logo. **Summer Games II** and **Winter Games** are due out from US Gold this autumn on both disc and cassette.

Conversion

"One of the problems we are increasingly finding is that cassette conversion is getting difficult," said Tim. "On Summer Games II and Winter Games we are going to have to load in events separately, as on the disc versions. Obviously that's much less satisfactory on cassette because of the loading time. Some of our **KIDS** titles such as **Mickey's Space Adventure**, simply defy conversion and will only be available on disc."

Mickey's Space Adventure is part of the mammoth Walt Disney deal US Gold pulled off last spring. It is an unusual contract for the company in that it gives US Gold the right to develop games based on **Return to Oz** and **Black Cauldron** — previously the company has only published existing games. The deal also includes **Sierra Online**'s children's educational titles **Winnie the Pooh in Hundred Acre Wood, Donald Duck's Playground**, and **Mickey's Space Adventure**.

US Gold's regular tie-up with **Datasoft** means that the company will be releasing the computer game based on **Goonies**, the new Steven Spielberg backed film. Goonies, the film, involves a gang of children bored with long summer holidays, who hear stories about buried treasure, and set off to hunt for it in a network of underground tunnels and caves. The plot sounds like a games programmer's dream.

Interestingly enough, US Gold's Goonies game will be released here in September although the film is scheduled for a Christmas run, so the micro will beat the movie by a good three months.

By Christmas, US Gold plans a catalogue of around 130 titles, including conversions to Spectrum, BBC, Amstrad and even Enterprise. Is there not a danger that some US companies might feel their products will get lost in the sheer size of US Gold's list?

Visibility

"We do try to ensure visibility by advertising titles separately, and not bringing out huge batches of games at any one time," said Tim. "We work out the advertisements and what sort of ads there should be for each title quite separately. But, again, you can't deny that the titles are competing against each other — we can't stagger launches so that the games don't clash."

The company also has two other trump cards up its sleeve for 1985. **Broderbund**'s much feted **Karateka** karate simulation will be available from Us Gold on the Commodore 64 this autumn. It will be interesting to see how it compares with Melbourne House's immensely popular **Exploding Fist**.

Secondly, the company is looking at possibilities of producing an official World Cup football program to coincide with next year's World Cup in Mexico.

A popular cliche this summer is that low software sales are ensuring that the strong companies are getting stronger and the weak ones weaker. Tim Chaney reckons that so long as the American companies can continue to release quality entertainment software, there's no reason why US Gold shouldn't go from strength to strength. But the emphasis has to be on the word quality. As Geoff Brown says, "We could go and pick up hundreds of programs from America — there are so many lying around. But they do have to be of a very high standard — that's what we pride ourselves on." ■

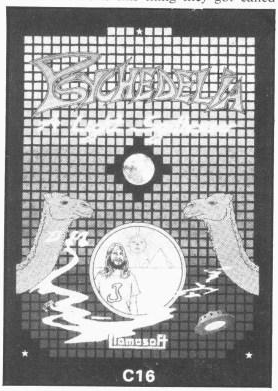
MINTER

The world's hairiest programmer turns his back on children's comics and starts a series for CH... anything could happen!

GREETINGS again, this time from the august pages of *Commodore Horizons* (well I enjoyed writing for *Zzap*, but it seems they didn't like my newsletter so I'm afraid I got the CHOP!) . . . but I don't mind at all, I'm still getting through!

Confessions of a Compunet Junkie . . . I've had a modem for quite a while now, an' up until the Commodore show I didn't really use it much, but I logged on the week after the Show and . . . well . . . I haven't been to bed before Net shutdown at 3am since, and I'm definitely in line for a mega-phone-bill next quarter . . .

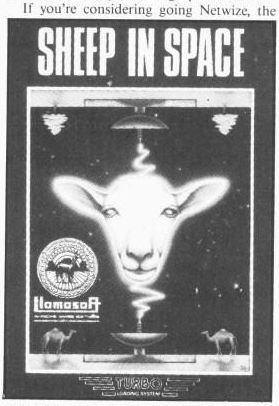
The trouble is this thing they got called



Chatline. You can go on, upload frames into a directory, anyone hangin' around reads them and uploads their reply which you can read immediately. Sort of like on-line CB but with a longer time delay and not so many wallies (although there are some!). It's nice in that you can sent text, graphic frames or even programs, and that several people can join in the chat at once. It gets quite 'clubby', there are several hard-core late-nighters who you regularly meet (there's even a group of late night mammals, that's YAK, ANTELOPE, RATT, COUGAR, YETI, etc) then there's the famous Fogg with his sheep and Bogg's zarjaz music demos . . . Most people have their own little directory somewhare (mine's called YAK'S HAIRY BIT) into which they upload demos, graphics, anything interesting that people may want to see, and usually for free, too. You can wander about the database at will downloading odds'n'ends of whatever you're interested in, then logoff and try them out. Of course you can buy commercial software too in a special area called Software Park, and most of it can be saved to disk or tape therefore bypassing the ol' "is it out on disk yet?" dilemma neatly. And anything which cuts out distributors and chain stores has got to be zarjaz.

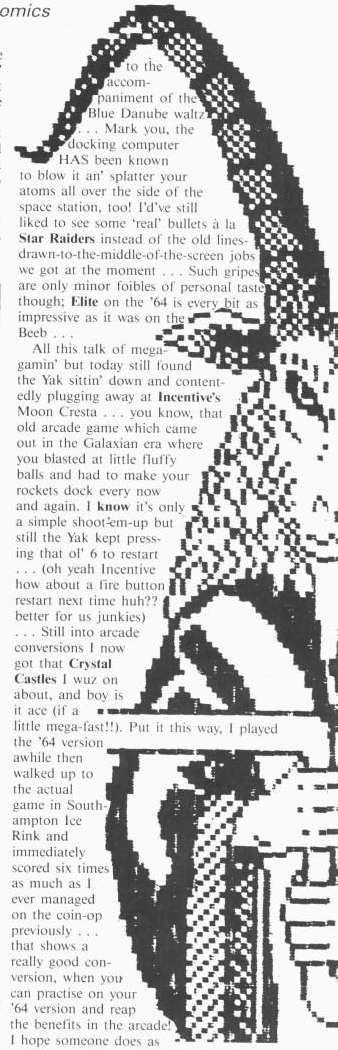
The only bad things I can say about the Net are that it does slow up a bit if you go on and there's a lot of other users about (like say a Sat afternoon) but if you're like me you'll do most of your nethackin' at night . . . which leads me onto my other gripe: it's staggeringly addictive (the bags under poor Yak's eyes will attest to that!!) and you'll have to watch it if you're not to cop that mega phone bill!

If you're considering going Netwize, the



advice of the Yak is Go for it!! it's ZARJAZ! an' I'll see you on the Chatline at 2am ok???

YakZappin' . . . Well I got my copy of **Elite** an' sure it's zarjaz but it's just not **Star Raiders** . . . Seriously though, it's well put together; if you liked it on the Beeb then you'll love it on the '64, the docking sequence is hyper-hyper, especially if you've a Docking Computer and you put that ace '2001' music on: the computer docks at breakneck speed



to the accompaniment of the Blue Danube waltz . . . Mark you, the docking computer HAS been known to blow it an' splatter your atoms all over the side of the space station, too! I'd've still liked to see some 'real' bullets à la **Star Raiders** instead of the old lines-drawn-to-the-middle-of-the-screen jobs we got at the moment . . . Such gripes are only minor foibles of personal taste though; **Elite** on the '64 is every bit as impressive as it was on the Beeb . . .

All this talk of mega-gamin' but today still found the Yak sittin' down and contentedly plugging away at **Incentive's** Moon Cresta . . . you know, that old arcade game which came out in the Galaxian era where you blasted at little fluffy balls and had to make your rockets dock every now and again. I **know** it's only a simple shoot-'em-up but still the Yak kept pressing that ol' 6 to restart . . . (oh yeah Incentive how about a fire button restart next time huh?? better for us junkies) . . . Still into arcade conversions I now got that **Crystal Castles** I wuz on about, and boy is it ace (if a little mega-fast!!). Put it this way, I played the '64 version awhile then walked up to the actual game in Southampton Ice Rink and immediately scored six times as much as I ever managed on the coin-op previously . . . that shows a really good conversion, when you can practise on your '64 version and reap the benefits in the arcade! I hope someone does as

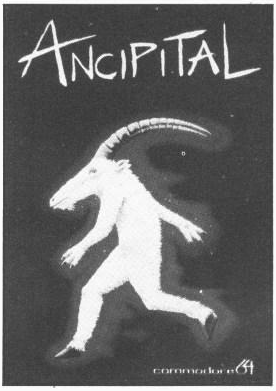
R MANIA

good a job with that mega-zarjaz **Marble Madness** arcade game — the Yak can't get enough of that one, many Minter 10p's have disappeared into Madness's electronic gullet . . .

The Yak was also well impressed by what he saw of Melbourne's new Kung Fu one at the Commodore show . . . great graphixx an' Oriental music too, and it's also unique in that it sustains soft-speech and animation simultaneously (although you can turn this off 'cos it does eventually sound like the Duel of the Daleks) but if you're into the martial-arts sims currently in the arkies then this is really good.

Yak Hackin' . . . I now have one of the Nemesis Machines, the Atari 520ST . . . me WELL blown away by that one, like Totally Amaaaazing . . . Still, Commodore ain't doin' too badly either, their 128 looks like being the very finest 8bitter on the market and an obvious upgrade-path for all us '64 junkies.

At first I must admit the ST overawed me an' I didn't see much in the Commodore's offering, but the more I look the better it gets. Look, in 128 mode you get the best Basic this side o' Alpha Centauri with lots of zarjaz stuff like commands for Sid an' a sprite-ed built-in, plus the clock (and therefore your progs) run twice as fast as on the '64. Plus you get 64 mode so you can still play whatever turns you on, then if you want to be megaserious you get CP/M and the Z80 mode. At around £300 that's pretty good in the Yakbooks, the only real problem you'll have is whether to go 128 (stayin' 8bit but retaining C64 compat an' also not having to learn that much new stuff t'start exploiting your extra power) or to go 16bit with the 240 ST (Atari's midrange ST: not much software at first, bit if you're prepared to wait I guarantee it'll blow your brains out) . . .



It'll be interesting to see what Commodore make of the new Amiga, too: scheduled for launch in America this summer, I rather wonder whether Commodore will introduce it into UK until they can get the price sub-£1K. High price apart, this machine sounds mega, 3 custom graphix chips I hear, 4096 colours someone mentioned (16 per scan line they said, an' if they talkin' in scan-lines it means raster interrupts all round again, yippee!!). Even if Amiga itself turns out really megaexpensive, there's still the possibility of Uncle Commie using similar chips in a lower-end micro . . .

Whilst on the subject of Amiga I must relate a weird encounter I had at t'Commie show . . . guy, Commodore employee, comes up t'me and asks me if I'll be doing any icon-driven graphic adventures (á la Shadowfire). Why, asks a puzzled Yak? 'Well' sez he 'we're looking for really original software for the Amiga'. So he want original stuff so why he want the Yak to copy Shadowfire huh?? Perhaps he was worried about the icons . . . but it goes without saying we're gonna use 'em on a mouse-driven sys like Amiga, so why not Colourspace or Mama or something, why only graphadvents?? There sure some weird thinkin' goin' on somewhere . . .

Anyway I finish now, I got subgame 2 to do, if any of you Commiefiends get Netwize do give me a MBX (id is LLAMA) or go on that Chatline, I'm the one with the bags under the eyes an' not typing straight from too many latenites . . . ■

Demystifying the machine code muddle

Assemblers, disassemblers, editors, monitors — what are they, and how can they help you to master machine code? ***John Cochrane*** *sorts out the confusion*

THIS article is about machine-code. There, with just one sentence I have probably scared off about half the potential readers of this article. Machine-code, monitors, assemblers, disassemblers, editors, these are words which confuse and scare a large proportion of computer users because they have come to represent the 'black-art' of computing, something that only the whiz-kids and computer-genius' can master. I won't make the mistake of claiming that machine-code is a simple subject, but I do say that with patience it can be understood by most programmers, and that most programmers will benefit from spending at least a little time experimenting with it.

I shall attempt to explain the differences between editors, monitors, and assemblers, which are the tools most frequently required when writing machine-code programes. The remainder of the article is a brief review of some of the commercial programs available, their relative strengths and weaknesses, and the ways in which they might be used. The programs reviewed are just a few of the many available but they represent a good cross-section of the types of programs on sale.

Software tools make it easier to get into machine code — but which do you need and how do you choose the best package?

Editor

An editor is a program which allows you to enter and modify files of data. The Commodore 64 has a very good built-in editor which is intended for Basic program files. Program files are built up by entering a line at a time. These program lines can be saved, loaded, listed, and modified. In the same way assembly-language (I'll explain this term in a moment) files, hex files, and data files need editing when working in machine-code and the Commodore 64 Basic editor is often used for this as well. When such things as automatic generation of line numbers or a block line-delete function are required then either the Commodore editor has to be extended or replaced with a new editor.

A monitor is a program which is used to directly examine the computer memory, to make changes to the memory, and to keep track of what the microprocessor is doing at various times. Most commercial monitors allow you to do additional things such as copy blocks of memory from one place to another. In principle, a monitor is all that is really needed to set up and run machine-code programs. In practice, however, monitors are too tedious to use for all machine-code programming but are important for some operations such as debugging machine-code programs.

Finally, assemblers. These convert assembly-language programs into machine-code programs. An assembly-language program is one which is written using microprocessor commands, or instructions, as words rather than the byte-codes actually used by the microprocessor. Thus, for example, the assembly-language instruction 'RTS' which means return-from-subroutine will be converted by an assembler into the numerical code 96 decimal (60 in hex). Assembly-language programs are step-by-step descriptions of machine-code which can be understood (in theory) by humans.

Many of the packages also include a disassembler. This displays the assembly-language equivalent of a machine-code program. The disassembler is usually included as part of the monitor program as it is a way of examining the programs currently held in memory.

Much confusion arises because the terms described above are often misused or used rather loosely. Most commercial 'assemblers' will also include an editor and/or monitor. Many 'monitors' will include a disassembler (converts machine-code into assembly-language) and perhaps even an assembler. Many programmers and writers talk of machine-code programming when they really mean assembly-language programming, assembly-language programs are called source-code in some literature, machine-code may be referred to as object-code, and so on.

Hex loader

If you want to start experimenting with machine-code you will need some of the software tools noted above, and probably more if you want to program seriously. It is possible to start with just the software already provided

in the Commodore 64. As I have mentioned, the Basic editor can be used as a general-purpose editor, blocks of memory can be saved and loaded using the normal Basic commands, and PEEK/POKE can be used to set up data and programs in memory. Hex-loaders are often reproduced in books and magazines which allow the writing of machine-code programs. Such programs are in fact primitive monitors. However the scope for serious programming is limited and producing machine-code in this way is very slow.

The next step up is to write your own monitor, or even a full assembler, starting from Basic. This is quite feasible, as David Lawrence and Mark England have demonstrated with the **Mastercode Assembler** which includes a monitor, an assembler, a disassembler, and an editor, but such programs are generally rather slow to use. Also, machine-code tools written around Basic will tend to be less sophisticated, and hence less versatile, than purpose-built commercial programs and they can use up quite large amounts of memory and leave comparatively little for your machine-code.

Commercial

If you want an easy life and are more interested in machine-code than in finding out how the Commodore 64 Basic system works, then you will go out and buy a commercial package. Which one you buy will depend on your own special requirements and the depth of your pocket. I have listed some of the most important features of a number of representative packages in the table, you will have to decide what it is you want to do before you can pick out the best package for yourself. If you want to delve into the depths of the Commodore memory but do not anticipate actually producing much machine-code of your own then look for a good monitor. If you intend writing commercial machine-code software of your own or you intend working on a particularly complex program then you should probably concentrate on the more sophisticated packages.

I have included the Mastercode Assembler in the tables, as it shows what can be done with a well thought out program entered from the keyboard. I have also included the **Ada Training Course** produced by First Software because the assembler and disassembler, although somewhat simple, are included as part of a much larger package.

Do not place too much emphasis on any particular feature noted on the tables, it is often possible to achieve a given effect even it a single special command is not provided. Also, the tables cannot tell the whole story about the strengths and weaknesses of each package.

Documentation is another important area. All the packages state that they do not attempt to teach machine-code to beginners but all should adequately explain what the package does and how to best use it, this is achieved with variable success. The **Zeus 64** instructions are easy to read and have a complete reference section, although if anything I think that there could be a little further explanation of the more complex assembly processes. The **Exmon** manual is very brief and offers very little by way of explanation but is at least complete. **The Mikro Assembler** manual is too brief and does not do the software justice; the user is left to experiment with the software to find out the limits of what can and what cannot be done. Finally, the manuals provided with the First Software products are translated from German and are very well prepared. Although there are a couple of areas where the translation is not as clear as it should be, the full descriptions and use of examples makes for a clear understanding of how to use the package. ■

HOW THEY COMPARE

	Master-code	1st Ada	Exmon	Zeus 64	1st Assm	Mikro Assm
Editor Facilities						
Auto line number				★		★
Renumber	★			★		
Block delete	★			★		★
Merge/Append				★	★	★
Disc directory			★	★		
Monitor facilities						
Register display			★	★	★	★
Memory hex display	★		★	★	★	★
Memory char. display	★		★		★	
Display to printer	★		★	★		
Fill memory blocks			★	★	★	
Copy memory blocks			★	★	★	★
Compare blocks					★	
Load/save blocks	★	★	★	★	★	★
Verify save			★			
Switch memory banks					★	
Search for string			★	★	★	★
Accept decimal entry	★	★	★			
Hex converter			★	★	★	★
Execute M/C	★	★	★	★	★	★
Execute subroutine			★	★		
Single step	★			★	★	
Breakpoints					★	
Trace				★		
Assembler facilities						
Assemble to (D)isc (M)emory (T)ape	DMT	D	M	M	DM	M
Displaced assembly				★	★	★
Split assembly	★		★	★	★	★
Chain assembly				★	★	★
Print source file	★	★		★	★	★
Print assembly	★		★	★	★	★
Label length (chars)	6	any	0	31	8	any
List labels/symbols	★			★	★	★
Exression (A)rithmetic (L)ogical (B)it	A			ALH	ALB	AH
Exression (H)alf byte						
Multi-instructions				★	★	
Macros					★	
Assembler branching					★	
Execution entry point				★		
Comments	★	★		★	★	★
Constants (H)ex (O)ctal (B)inary (D)ecimal (C)BM char (A)scii	HODC	HD	H	HBDCA	HBDC	HODC
Search for string				★		★
Search and replace				★		
Disassembler facilities						
Modify code			★	★	★	
Print disassembly	★	★	★	★		

Package: The Ada Training Course
Price: £50 (disc)
Supplier: First Software Ltd, Unit 20B, Horseshoe Road, Pangbourne, Berks. Tel. 07357 5244

Package: Exmon
Price: £8 (tape), £10 (disc)
Supplier: Interceptor Micro's, Lindon House, The Green, Tadley, Hants. Tel. 07356 71145

Package: Zeus 64 Assembler
Price: £10 (tape), £15 (disc)
Supplier: Crystal Computing, 125 Smedley Road, Cheetham Hill, Manchester. Tel. 061-205 6603

Package: Assembler Monitor 64
Price: £20 (disc)
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Package: Mikrø Assembler
Price: £60 (cartridge)
Supplier: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow. Tel 01-861 1166

Glorious colour

An extract from ***Raeto West's*** *authoritative Programming the Commodore 64*

UNDERSTANDING user-definable characters is essential to getting the most from multicolor mode. However, the general idea is fairly easy to grasp. It is another Commodore compromise: In order to get more color into the screen, resolution is cut in half. Below is a discussion of how this works with ordinary graphics; the principle is the same in high-resolution mode.

Normally, a "one" in a character definition shows up in the foreground color, and a zero shows up in the background color; so only two colors are obtainable within each 8×8 dot character area. Multicolor mode allows four colors to be selected per character, at the cost of halving the horizontal resolution. Instead of 8×8 dots, it offers 4×8 "wider" dots, each of which can take one of four colors.

Multicolor mode is enabled by setting bit 4 of VIC-II register $16 to 1. This is done by using POKE 53270,PEEK(53270)OR16 (normally, POKE 53270,216). The following command switches back to normal mode: POKE 53270,PEEK(53270) AND239 (normally, POKE 53270,200).

Enabling

The above POKEs enable and disable multicolor mode globally, over the whole text area; but it must also be enabled on a character-by-character basis to have any effect. This is done by the value in the corresponding color RAM location: If it is from 0 to 7, then the character appears in ordinary mode, and if it is from 8 to 15, then the character will be in multicolor mode. In other words, bit 3 in a color RAM location determines whether the corresponding character is in ordinary or multicolor mode. Thus, the screen may simultaneously display multicolored and ordinary characters.

To get the feel of this, type some lettering in several colors, including the less saturated Commodore-key colors. Enable multicolor mode with the POKE given above. You'll see that characters in black through yellow are unchanged, while those in orange through light gray alter dramatically, because bit 3 of their color RAM has this dual function.

The source of the color in each two-dot unit is shown by table 1.

Registers

The three registers can take values from 0 to 15; the three bits specified by color RAM select values 0-7. Notice that units containing 00 appear as the background color whether the display is in standard or multicolor mode. Note that the border color in 53280 is independent of the background colors, unlike VIC-20's multicolor mode.

It follows from this table that an orange (Commodore key-BLK) character will be displayed as black when multicolor mode is enabled — try it with reverse-space block in orange. Similarly, a light green character switches to green.

Consider how the character A is defined in ROM (see table 2).

The first illustration shows how the definition is interpreted in normal mode: zeros display in the background color and ones display in the foreground color, specified by the character's color RAM.

The second and third illustrations show how the bits are interpreted as grouped in pairs by the 64 in multicolor mode. The abbreviations BG0, BG1, and BG2 represent the three background color registers, which are set to 6 (dark blue), 1 (white), and 2 (red), respectively, on power-up. (The SX-64 sets BG0 to white, however). CR is color RAM, which is 14 (pale blue) on powering-up the 64. Note that the three background colors apply over the whole screen area; only the character color can vary from character to character. Therefore, when designing multicolor graphics, select the three colors you wish to spread most widely on the screen, and let the character color vary locally.

Assuming the 64 has its power-up values, enter POKE 53270,216 to enable multicolor mode. All characters will be displayed in multicolor mode, since their color RAM value is greater than 7. Assuming the relevant registers have their power-up values, BG0 will show up as dark blue, BG1 as white, BG2 as red, CR as a dark blue (produced by the pale blue value with bit 3 stripped off). This is what the colors should be, but they may not show up particularly clearly on your TV or monitor.

The cursor disappears because the reverse space character is a block of bit pairs in the pattern 11; the color is given by color RAM and thus shows up in multicolor mode as dark blue. Type Commodore key-GRN to make it reappear: printing will continue in multicolor mode; CTRL-GRN will also make it reappear, but causes printing to continue in standard mode because of the different color RAM settings. Enter POKE 53283,1 to make BG2, as well as BG1, white; the multicolored characters now contain large areas of white. Type Commodore key-WHT followed by a few more characters: even larger areas now show as white, as BG1 and BG2 and CR are all now white. Usually, of course, contrasting colors will be used. CTRL-WHT will select a foreground color value less than 8; type this and then further characters: these display in standard mode, because of the color RAM value, and are unaffected by BG1 and BG2 settings.

These multicolor characters have a chunky appearance, since they have half the horizontal resolution of standard characters. They can be used for decorative borders and designs, and for graphics. You may need to experiment to find the best combinations of colors for this effect. They are easier to use than user-defined characters and take up no extra space in RAM. Finding characters which look right may be difficult, though.

Multicolour

With some work characters in multicolor mode can produce impressive results. For example, BG0 may be set to 12, and BG1 and BG2 to 8 and 14, giving orange and light blue and the local colors on a medium gray background, allowing, say, a gray sky, orange ground, and light blue middle-distance, with small objects in any of the eight main colors.

The following BASIC program lets you experiment with all combinations of BG0, BG1, BG2, and CR. It displays almost the entire character set twice, once at the top of the screen in standard mode and again below it in multicolor mode. The function keys f1, f3, f5, f7 advance the values in the three register values and the color RAM of the multicolor mode characters.

You may prefer to experiment with character sets in two colors only; if so, modify the program to POKE the background registers with 0, and make the function keys toggle, with POKE 53281,1–(PEEK(53281) AND 15)

Table 1

Bit Pattern:	Color Specified By:	Address of Register:
0 0	Background 0 color register (screen background color)	53281 $D021
0 1	Background 1 color register	53282 $D022
1 0	Background 2 color register	53283 $D023
1 1	Lower three bits of color RAM (character color)	

Table 2

Normal:	Multicolor:	Displays As:
0 0 0 1 1 0 0 0	00 01 10 00	BG0 BG1 BG2 BG0
0 0 1 1 1 1 0 0	00 11 11 00	BG0 CR CR BG0
0 1 1 0 0 1 1 0	01 10 01 10	BG1 BG2 BG1 BG2
0 1 1 1 1 1 1 0	01 11 11 10	BG1 CR CR BG2
0 1 1 0 0 1 1 0	01 10 01 10	BG1 BG2 BG1 BG2
0 1 1 0 0 1 1 0	01 10 01 10	BG1 BG2 BG1 BG2
0 1 1 0 0 1 1 0	01 10 01 10	BG1 BG2 BG1 BG2
0 0 0 0 0 0 0 0	00 00 00 00	BG0 BG0 BG0 BG0

Listing 1

```
10 VIC=53248:COL=55296
20 PRINT "{CLR}"
30 FOR J=0 TO 239
40 POKE 1024+J*2,J:POKE COL+J*2,0
50 POKE 1024+520+J*2,J:POKE COL+J*2+520,8
60 NEXT
100 POKE VIC+22,PEEK(VIC+22) OR 16
200 GET X$:IF X$="" THEN 200
210 IF X$="{F1}" THEN POKE 53281,(PEEK(53281)+1) A
    ND 15
220 IF X$="{F3}" THEN POKE 53282,(PEEK(53282)+1) A
    ND 15
230 IF X$="{F5}" THEN POKE 53283,(PEEK(53283)+1) A
    ND 15
240 IF X$<>"{F7}" THEN 200
250 NC=((PEEK(COL+520)+1) AND 15) OR 8
260 FOR J=0 TO 239:POKE COL+J*2+520,NC:NEXT

270 GOTO 200
```

Listing 2

```
235 IF X$="{F8}" THEN POKE 53284,(PEEK(53284)+1) A
    ND 15
236 IF X$="M" THEN POKE(53265),PEEK(53265) AND 191
    : POKE 53270,PEEK(53270)OR16
237 IF X$="E" THEN POKE(53270),PEEK(53270) AND 239
    : POKE 53265,PEEK(53265)OR64
250 NC=PEEK(COL+520)+1
```

or a similar statement. The AND 15 is necessary to remove the high nybble, which varies. Also try replacing line 250 with 250 NC=1-NC.

Multicolor mode is probably the 64's most popular graphics mode. Although in theory resolution is halved, in practice TV limitations mean that 320 individual colored dots (that is, 40 sets of 8) aren't really distinguishable across a TV screen. The 64's Commodore key-+ character, for example, is *not* made of alternate 0's and 1's. It's composed of alternate 00 and 11 pairs. This is why multicolor characters often look similar to their normal equivalents, and why normal characters — Commodore key-Z, for instance — often appear thicker than you'd expect.

Even with multicolor mode enabled, characters don't *have* to be displayed in multicolor mode, which adds to the mode's versatility. Programs can be developed using PRINT and/or POKE to move characters around; such programs will work just as well if the graphics are redefined in multicolor form. This requires more work, since character definitions must be loaded into RAM and the VIC chip made to access them. However, this is till easier than full bitmapping.

Bitmapping

Extended background color mode is a relatively new display mode, and the VIC-20 has no analogous mode; it cannot coexist with other modes. The screen blacks out as long as multicolor mode or bitmapping is also switched on. Like multicolor mode, the full graphics set is divided by four to allow more color. Usually the 64's background color (BG0) extends over the whole background, and though each of 1000 character colors can vary, the background has to be in common — though this is disguisable by including solid blocks of local color. Extended background color mode allows the background and color of each character to be chosen from one of four colors. Dots are interpreted singly, not in pairs like multicolor mode.

The trade-off is only 64 characters can be displayed at one time. The two highest bits of each character determine the background color. (See table 3).

Table 3

High Bits of Character	BG Color Specified By:	Address of Register:
0 0	Background 0 color register (usual screen background)	53281 $D021
0 1	Background 1 color register	53282 $D022
1 0	Background 2 color register	53283 $D023
1 1	Background 3 color register	53284 $D024

The displayable characters are the first 64 in the character definition area. The foreground color is set by the color RAM nybble. In summary, each of the 1000 characters' foregrounds can be set to colors 0-15; each background can be set to one of four colors, each of which may be 0-15; and only 64 differently shaped characters can be displayed, each in two colors at most.

Extended background color mode is selected by setting bit 6 of VIC-II register $11 to 1; this can be done with POKE 53265, PEEK(53265) OR 64. The command POKE 53265,PEEK(53265) AND 191 switches back to normal mode. (POKE 53265,91 for on and POKE 53265,27 for off normally work fine.)

You can reset the VIC-II registers using RUN/STOP-RESTORE. Background colors 0-3 are set to 6, 1, 2 and 3, corresponding to blue, white, red and cyan. Now, enable extended background color mode with the above POKE. The cursor flashes red not pale blue, because reverse-space is POKEd as 160 to the screen: the bit pattern is %10100000, which is 32 with %10 as the leading bits. So it shows as a space character with background color governed by BG2, which is red.

Type a few unSHIFTed letters, and they will appear the usual light blue on dark blue. Now try SHIFTed letters; they are unSHIFTed on the screen, but their background is now white, governed by BG1. The POKE codes for A and SHIFT-A differ by 64, so the *same character* is displayed in extended background color mode.

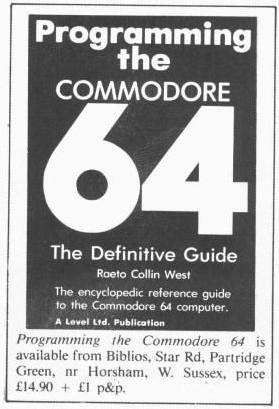
Type CTRL-{RVS} followed by unSHIFTed letters; now the background is red, like the cursor, because bits %10 select register BG2. Finally, without pressing RETURN, type in a few SHIFTed letters: this {RVS}-SHIFT combination adds bits %11, selecting BG3's cyan background. The result is a bit hard to read on some sets; try POKE 532810,0: POKE 53283,7, setting BG0-BG3 to black, white, yellow, and cyan, with red lettering (POKE 646,2).

Highlights

For a further demonstration, add these four lines to the "Multicolor Mode" demo program and run the result: (listing 2)

Extended background color mode can now be selected by typing E, and multicolor mode by typing M. Pressing f8 advances the value in register BG3, while the other keys function as before.

You'll see the reduced character set and extra background colors clearly. The small available range of character shapes makes this mode unsuitable for most purposes. But if you're content with numerals, uppercase letters, and punctuation symbols, extended background color mode allows colored highlighting which is otherwise much harder to program. The unSHIFTed, SHIFTed, reverse, and reverse-SHIFTed characters (as ordinarily entered) will be displayed on background colors as stored in 53281-53284. Note that unSHIFTed space, conveniently, appears as the default background color.■



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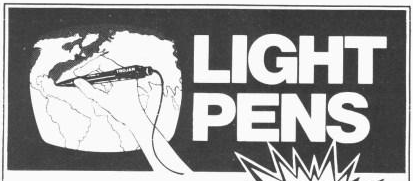

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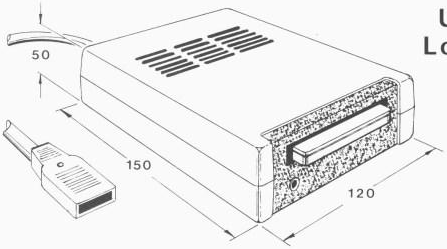

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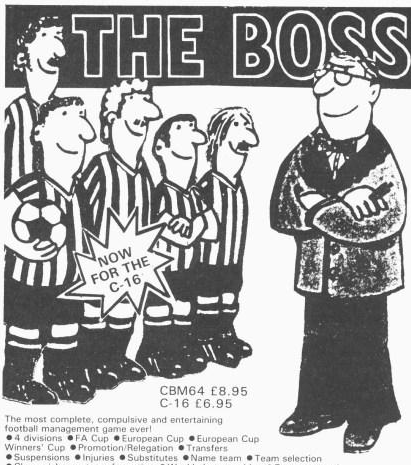

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10 P=0:G=0:PRINT"■■":POKE53280,0:POKE53281,0
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Relative problems

I OWN a 64 and a 1541, and I'm very interested in business and graphics programs. I have tried to design a program which will calculate and store expense details, but I haven't been able to get through it because I don't know how to work with relative files. Could you give some suggestions for such a program?
F Riachy

IT'S NOT practical to give a complete program here due to lack of space, but here are a few hints. The main menu should have options for FILE CREATE, RECORD ENTER, READ, AMEND, DELETE, PRINT, EXIT and BACKUP, if you can program this for a single drive. You can have a relative file for each expense section, with the file being named after the subject — say E$. Next fix your maximum record length at L, not exceeding 254. A subroutine will be required to ensure that the user input does not exceed that length.

An alternative is to have a line such as E$=LEFT$(E$,L) to restrict length, but then part will be lost.

OPEN 2,8,2,E$+",L,"+ CHR$(L+1) will open a relative file. Records are written and read using record numbers, and the RN must be split into LObyte, Hibyte format using NH%=N/256 and NL%=NH%*256. Having input the data from the user as, say, D$, then print to the relative file with OPEN15, 8, 15.

PRINT# 15, "P" + CHR$ (2) + CHR$ (NL) + (CHR$) (NH%) + CHR$ (1) and PRINT# 2, D$.

The CHR$ (2) is the channel number as created in the OPEN 2, 8, 2, and the last CHR$ is the position number in the relative record.

Check the error channel after each read or write, not forgetting that ERROR 50 can be expected on first using the file (you can ignore this error). ERROR 50 is generated every time you expand the file to include more records. Use the maximum record number first, and you will only have ERROR 50 once.

To read the file, use OPEN 2,8,2,E$ and INPUT# 2,D$. The same file can be used for either reading or writing.

Injun trouble

I AM TRYING to write a program for the Vic 20 in which nine missiles (arrows) are fired upwards from a base. I can fire these by pressing keys 1 to 9, but the trouble arises from the fact that the arrows stay at the top of the screen, and I can use the same arrows over and over again, instead of just once. Can you help out?
D B Mather
Worthing
Sussex

TO REMOVE the arrows from the top of the screen, test the screen locations with IF PEEK (1024+ location) = ASC (arrow), and then POKE these locations with 32, to blank the arrows out. The easiest way to avoid using the same routine again is to set up a marker array using DIM (9). Then when you find the string which gets the key pressed — A$ — equals "1", set N(1)=1, and if A$ = 2 put N(2)=1, and so on. Then test for this condition with a line IF N(VAL(A$))=1 THEN GOTO the line containing the original GET A$, which will discard arrays once used. Avoid getting stuck in a loop with no way out by providing an exit routine in your menu.

Stop moving!

I AM WRITING a machine code program for the 64 which requires a scroll routine. I can do the scroll fine, but I need to know how to use the interrupts to stop the lines from flickering and to keep certain parts of the screen stationary.
Andrew Ridgwick

TO REMOVE the black lines, suppress the edges of the picture by putting bit three in $D016 to 0 (this selects thirty columns) and bit three in $D011 to 0 (this selects twenty-four rows). This affects the screen appearance only, not the internal format. Alternatively, you can try matching the border and background colours. You will certainly get flickering if your scroll is too slow. You can use bitmapped graphics to control individual parts of the screen, but it's too large a subject to handle here — try Raeto West's book mentioned elsewhere in this issue.

Loading screen

I READ with great interest the article on copying ROM to RAM on the 64 in the June CH. I wonder if you could help with the problem of displaying graphics on screen while loading from tape — the ROM to RAM routine seemed the answer. I managed to prevent the screen from blanking by altering the code from 63629 to 63636. However, this somehow prevents the machine from reading the saved data from tape. Your thoughts on the matter would be much appreciated.
P Dent
Seaham
Co Durham

THE CODE you altered is in the middle of the common code for cassette read and write. The reason that the screen is disabled while reading and writing tape is to speed up the process; if your cassette deck is on the borderline of alignment, that may explain the problem you're having. I presume that you changed the code to NOP (no operation), but did you also alter the code at 64661 ($FC95) to NOP's? LDA $D011, ORA$10, STA$D011 makes the screen visible again.

1520 user group

I HAVE a 64 and a 1520 printer plotter, but there is practically no software compatible with the 1520 on the market. The 1520 has a lot of features such as line plotting, four colour graphics, dashed printing and so on. I have heard that there is a user group for the 1520 — maybe you can tell us more?
M Williams
Barry
S Glam

YOU SHOULD contact Steven Birks, 86 Birches Head Road, Birches Head, Stoke-on-Trent, ST1 6LJ.

Converting Vic 20 colour codes to work on the 64

I HAVE almost finished writing an adventure game for the 64, and have decided that it needs an auto-run. Could you give a 64 version of the autorun for the Vic in the February issue? Secondly, could you translate a few of the more common VIC 20 POKEs, such as screen colours, volume and so on, into the corresponding 64 codes?
S J Nixon
Mow Cop
Staffs

A BASIC autoloader for the 64 and tape is given on page 483 of Raeto West's programming bible, *Programming the 64*, which is available from Biblios Star Road, Partridge Green, Horsham, W Sussex, at £14.90. Like many such routines, it's too long to reproduce here — though readers will be pleased to know that there's an extract from Rae's book on 64 graphics in this issue.

As for the codes;

Colours	Vic	64
Black	8	0
White	24	1
Red	40	2
Cyan	56	3
Purple	72	4
Green	88	5
Blue	104	6
Yellow	120	7

Volume; 36878 54296

But the 64's sound abilities are much more complex than the Vic's.

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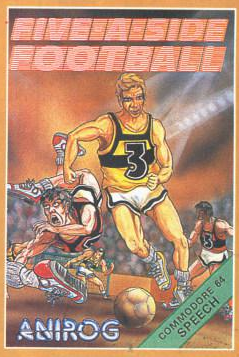
Available for Amstrad and MSX in early autumn.



OUT ON A LIMB

FEE - FIE - FO - FUM

I smell the blood of an Englishman

HA - HA - HA - HA - HA!

Will Jack be warned by the mocking sinister speech of the giant or will he continue his quest to retrieve the family fortune with nothing but his agility of mind and body to help him.

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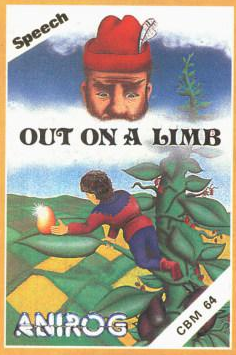
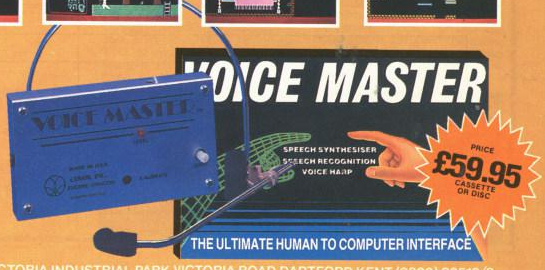


The stunning speech effects in the above programs were generated by ANIROG/COVOX VOICE MASTER

Contact Anirog for further information.



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